GROUND WATER RULE

Infrastructure Finance Conference
October 24, 2007

OVERVIEW

- Promulgation
- Sanitary Surveys
- Hydrogeologic Sensitivity Assessment
- Source Water Monitoring
- Treatment Technique Requirements
- Reporting and Recordkeeping
- Special Primacy Requirements (142.16(a)(2) and (o))

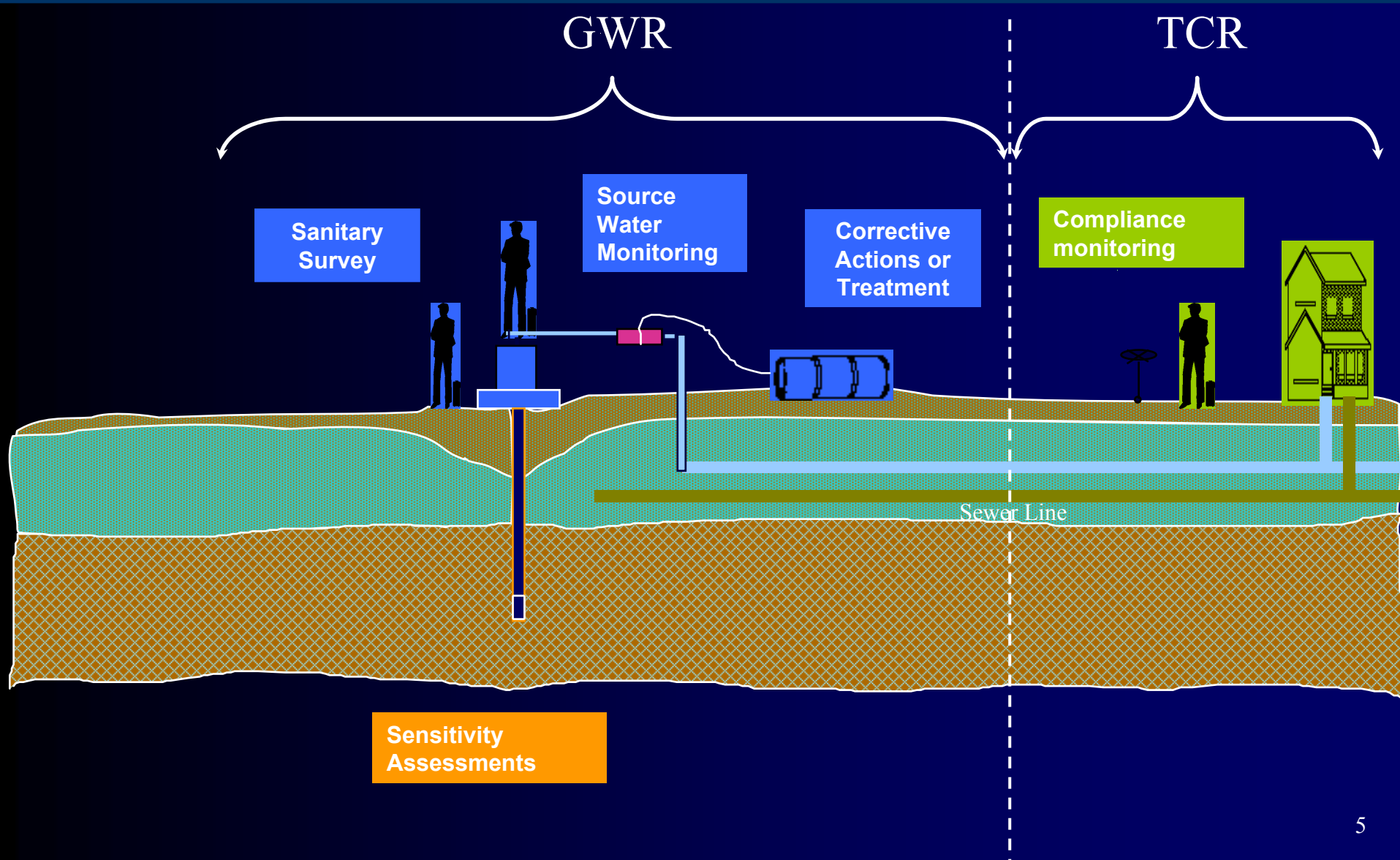
RULE DEVELOPMENT BACKGROUND:
PUBLIC HEALTH RISKS

- **CDC Outbreak Data: 1971–1996**
  - **318 of 371 outbreaks associated with ground water systems**
  - **Of those 318 microbial outbreaks:**
    - **86% were associated with source water**
    - **11% were associated with the distribution system**
    - **3% were of unknown cause**
  - **Of those involving source water, just under half were systems practicing disinfection**

GROUND WATER RULE

- **Ground Water Rule Promulgated January 8, 2007.**
- **Ground Water Rule is effective December 1, 2009.**
- **The rule apples to all systems that use ground water as a source unless it is combined with surface water (or GWUDI) prior to treatment.**
  - **This includes consecutive systems receiving finished ground water.**
- **Will apply to 94% (1,190) systems in New Mexico.**

REGULATORY PROVISIONS



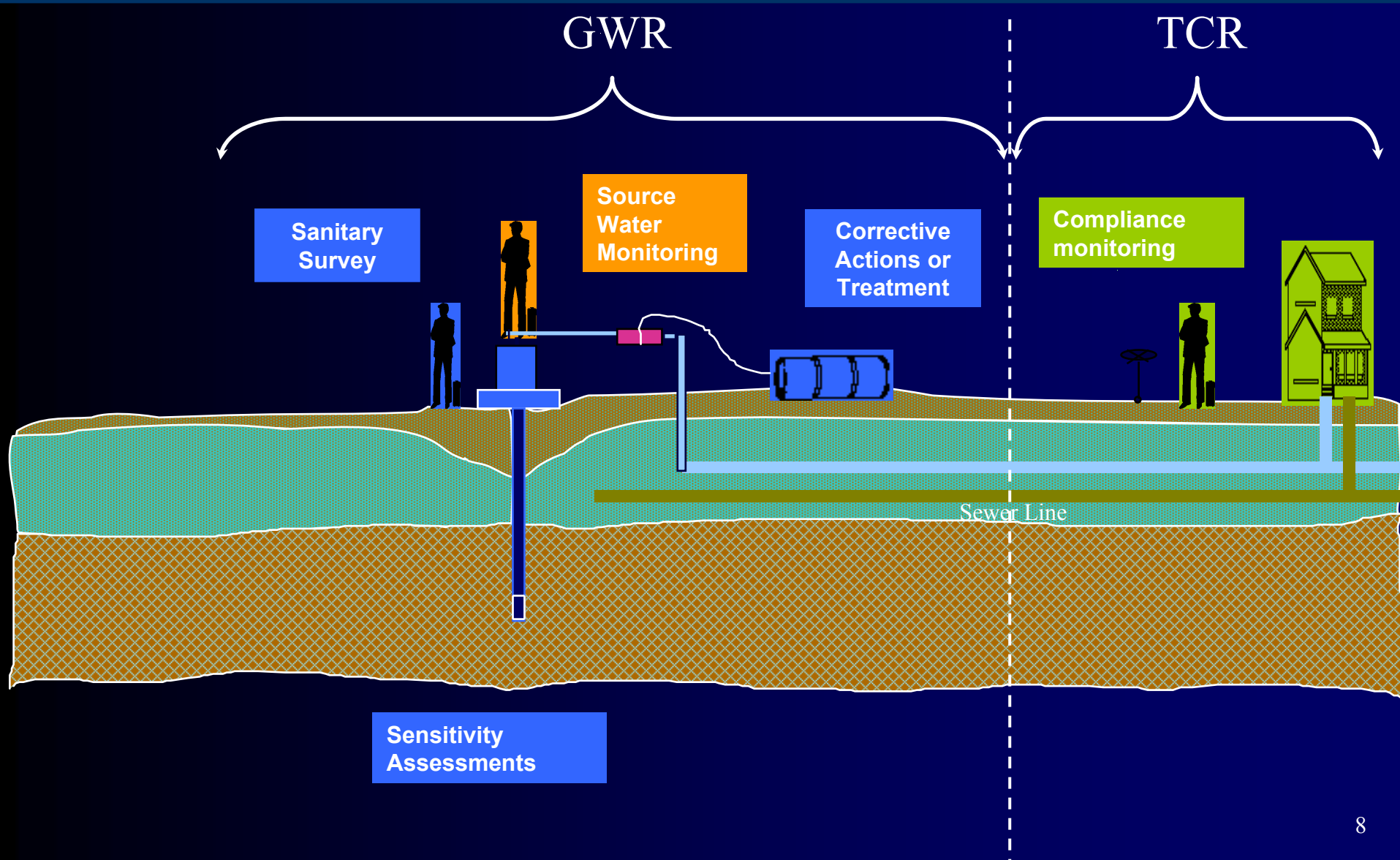
HYDROGEOLOGIC SENSITIVITY ASSESSMENT

- **Purpose**
  - **To identify sensitive sources that will be required to perform routine microbiological monitoring of sources.**
- **Scope**
  - **Non-disinfecting ground water systems**
- **Frequency**
  - **One-time assessment**

HYDROGEOLOGIC SENSITIVITY ASSESSMENT (continued)

- **Two key components of a hydrogeologic assessment:**
  - **State determines whether a system's wells are located in a sensitive aquifer type (karst, gravel, or fractured bed rock)**
  - **State determines whether a hydrogeologic barrier is present that protects wells in a sensitive aquifer type**
- **States may use information collected through the SWAPP for the hydrogeologic sensitivity assessment**

REGULATORY PROVISIONS



SOURCE WATER MONITORING

- **Two types of source water monitoring requirements:**
  - **Routine source water monitoring**
  - **Triggered source water monitoring**

ROUTINE SOURCE WATER MONITORING

- **Purpose**
  - **To determine if a sensitive source has fecal contamination**
- **Scope**
  - **Systems that do not provide disinfection.**
  - **Hydrogeologically sensitive sources, as determined by the State.**
- **Frequency**
  - **Monthly for at least one year.**
  - **Begin 1 month after being notified that source is sensitive.**
  - **Sample each source.**
  - **State can eliminate or reduce sampling**

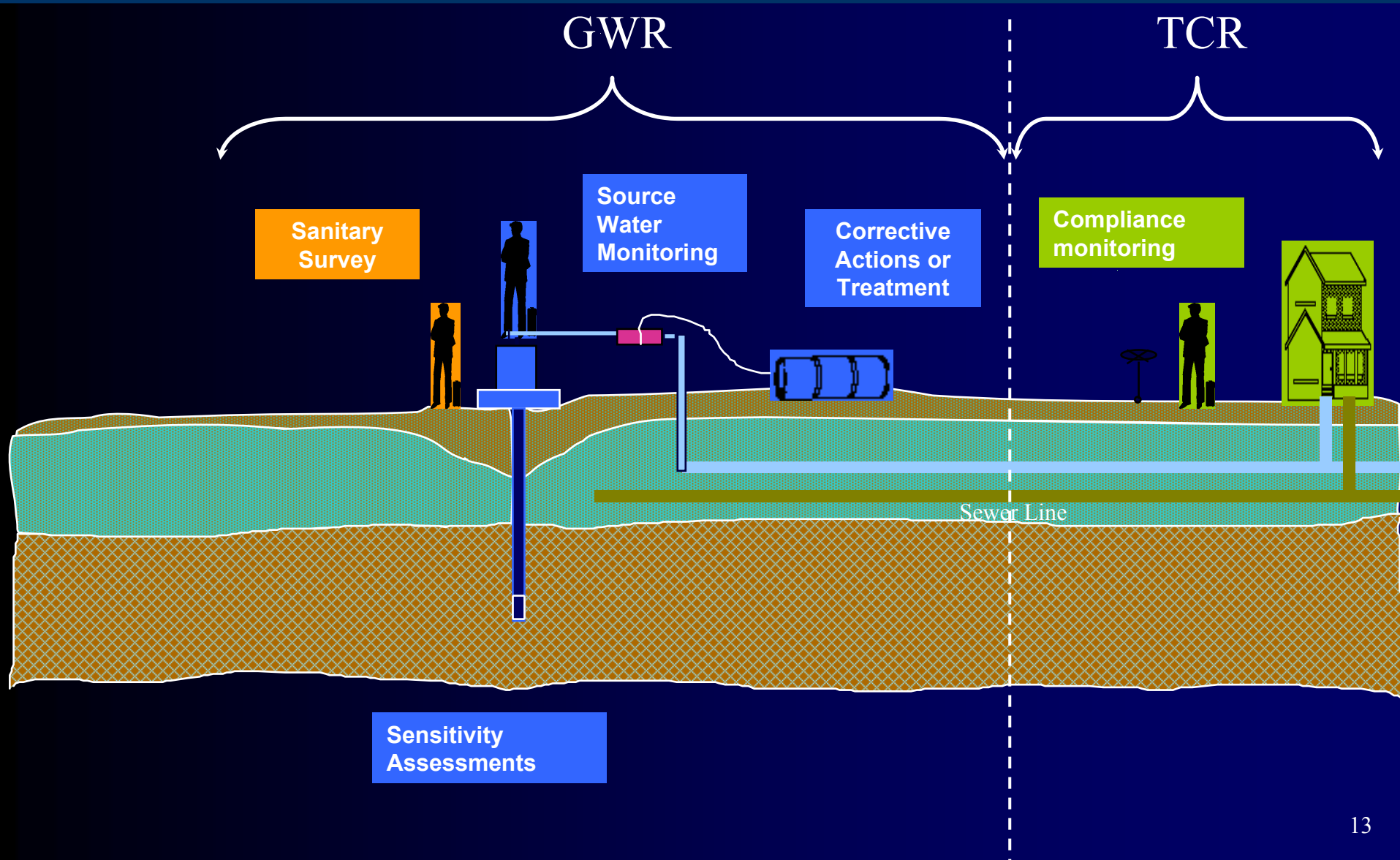
TRIGGERED SOURCE WATER MONITORING

- **Purpose**
  - **To determine if a TC positive sample is caused by source water contamination.**
- **Scope**
  - **Systems that do not treat to 4 log (99.99%) – i.e., disinfect**
- **Frequency**
  - **Triggered by a total coliform positive sample in the distribution systems (Total Coliform Rule).**
    - **Must be a valid total coliform result.**
- **Notification**
  - **Water systems must do appropriate public notice. This is Tier 1 Public Notice when a triggered source water sample is positive for a fecal indicator.**

TRIGGERED SOURCE WATER MONITORING (cont.)

- **Sampling**
  - **Must sample source water within 24 hours.**
  - **This includes all sources that could contribute.**
  - **System can identify "representative" sources that serve th affected portion of the distribution system.**
- **Consecutive Systems**
  - **Purchased water systems must notify wholesaler of positive result within 24 hours**
  - **Wholesale systems must conduct source water monitoring within 24 hours for being notified.**

REGULATORY PROVISIONS



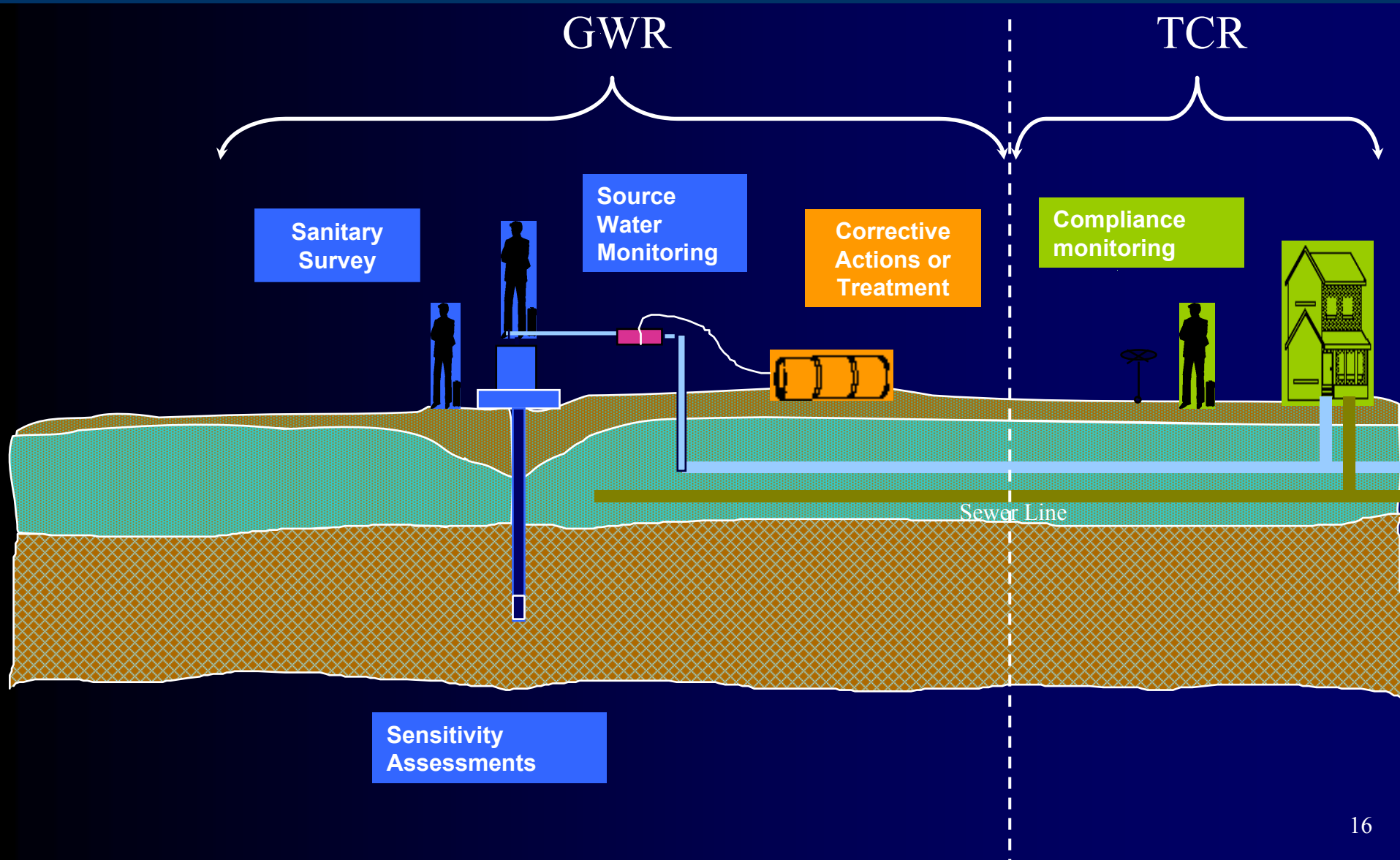
SANITARY SURVEYS

- **Frequency**
  - **Every 3 years for CWS; 5 years for NCWS**
- **Eight Elements of a Sanitary Survey – To match ESWTR**
  - **Source**
  - **Treatment**
  - **Distribution system integrity**
  - **Finished water storage**
  - **Pumps, pump facilities, and control**
  - **Monitoring, reporting, and data verification**
  - **Water system management and operations**
  - **Water system operator compliance with State requirements**

SANITARY SURVEYS (continued)

- States must identify significant deficiencies
- State must have corrective action authority
- Systems must fix significant deficiencies or apply treatment

REGULATORY PROVISIONS



REGULATORY PROVISIONS: CORRECTIVE ACTION

- **Purpose**
  - **To protect public health by eliminating or preventing exposure to pathogens**
- **Scope**
  - **A water system must take one of these actions to address a significant deficiency identified during a sanitary survey, or in response to confirmed source water contamination (when one of the follow-up source water samples is positive for a fecal indictor).**
  - **A state may require corrective action be taken in response to an initial fecal indicator positive sample from triggered source water monitoring, triggered monitoring at a wholesale system, or assessment monitoring.**
- **Frequency**
  - **Corrective actions must be completed within 120 days or on a State approved schedule**

REGULATORY PROVISIONS: CORRECTIVE ACTION (continued)

- **Corrective action approaches includes one of the following:**
  - **Correct the significant deficiency**
  - **Eliminate the source of contamination**
  - **Provide an alternative source of water**
  - **Provide treatment that reliably achieves 4-log inactivation or removal of viruses**

CALCULATING INACTIVATION CREDIT

- **How is the Inactivation Credit determined?**
  - **Sampling Required**
    - **Temperature (°C)**
    - **pH**
    - **Disinfectant Residual, in mg/l**
    - **Peak Hourly Flow, in Gallons/Minute (GPM)**
    - **Total Volume between point of disinfectant application and the first customer, in gallons**

CALCULATING INACTIVATION CREDIT

- **How is the Inactivation Credit determined?**
  - **Obtain Information**
  - **Determine CT Value**
  - **Compare CT Value to Appropriate CT Chart**
  - **Find the Log Inactivation Credit**

- **CT (mg-min/L) = Concentration of Disinfectant (mg/L) X Contact Time (minutes)**

TREATMENT TECHNIQUE COMPLIANCE

	Log Inactivation		
	2.0	3.0	4.0
pH = 6-9			
Temperature (C)			
0.5	6	9	12
5	4	6	8
10	3	4	6
15	2	3	4
20	1	2	3
25	1	1	2

TREATMENT MONITORING

- **Purpose**
  - **Ensures reliable disinfection treatment (4-log inactivation or removal of viruses)**
- **Scope**
  - **Systems that notify the State that they currently achieve 4-log inactivation**
  - **Systems that select disinfection as a corrective action**
- **Frequency**
  - **Continuously for systems serving 3,300 or more people**
  - **Daily for systems serving 3,300 or fewer people**

REPORTING AND RECORDKEEPING

- **Ground water systems conducting compliance monitoring must notify the state by the end of the next business day any time the system fails to meet state-specified requirements for disinfectant residuals, membrane operating criteria, etc.**
- **Water systems completing corrective action must notify the state within 30 days. The water system must maintain records of:**
  - **Corrective actions**
  - **Public Notice**
  - **Sample invalidation**
  - **Records related to performance of compliance monitoring**

SPECIAL PRIMACY REQUIREMENTS

- **Administrative**
  - **Description of the state authority to require tier 1 public notice in place of tier 2 public notice for GWR violations.**
  - **Demonstration that the state has the authority to require source water monitoring.**
  - **Demonstration that the state has the authority to require corrective action to address significant deficiencies or source water contamination and the authority to require consultation with the state.**
  - **States must also describe how they will implement their sanitary survey program.**

SPECIAL PRIMACY REQUIREMENTS

- **Surveys/Treatment**
  - **The state must provide at least one example of a significant deficiency for each of the eight elements and describe how it will determine that a community water system has an outstanding performance record so the frequency of surveys can be extended to 5 years.**
  - **The criteria the state will use when extending the 24 hour time limit for triggered source water monitoring.**
  - **The criteria the state will use to determine that the cause of a total coliform positive sample is directly related to the distribution system so source monitoring is not triggered.**
  - **The criteria the state will use for invalidation of samples.**

SPECIAL PRIMACY REQUIREMENTS

- **Surveys/Treatment (cont.)**
  - **Criteria for allowing source water monitoring at a location after treatment.**
  - **Process state will use to determine that a system is achieving 4-log treatment of viruses including what monitoring and compliance requirements the state will require for each type of treatment.**
  - **The criteria the state will use to determine if a system may discontinue 4-log treatment of viruses.**

SPECIAL PRIMACY REQUIREMENTS

- **Source Water Monitoring (Sensitivity Assessments)**
  - **States must decide which viral indicator (E. coli, enterococci, coliphage) they will require.**
  - **States must determine which systems are high risk and should perform assessment monitoring.**
  - **States will need to decide what criteria (Hydrogeologic Sensitivity Analysis, source water monitoring history, etc.) they will use to make the high risk determination.**
  - **States will have to determine the appropriate schedule for each system required to do assessment monitoring and track compliance.**